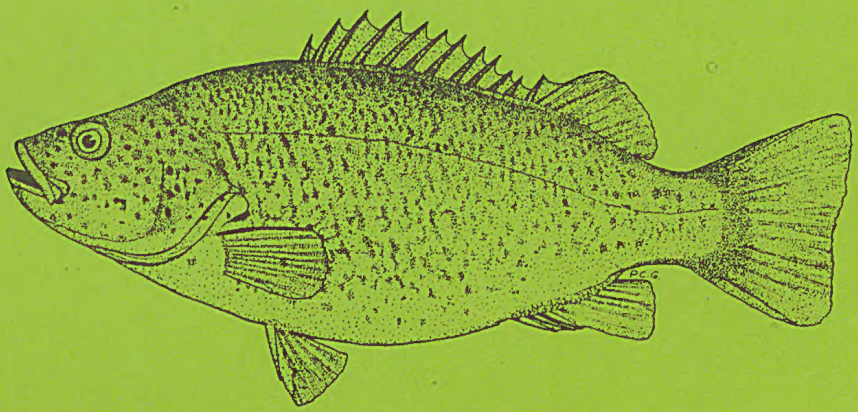
AUSTRALIAN SOCIETY FOR LIMNOLOGY INC

NEWSLETTER



VOLUME 29 NUMBER 2

JUNE 1991

Registered by Australia Post. Publication No. VBG9005906

MEMBERSHIP DETAILS

The Australian Society for Limnology Inc. (ASL) is an association of over 400 people with professional or amateur interests related to Australian inland waters. Since its inception in 1961, the society has played an important role in fostering limnology in this country. The ASL promotes liaison between limnologists in academic, government and private institutions and has a vested interest in the conservation of aquatic and related resources. Annual conferences are held near centres of limnological interest, and the programme includes scientific sessions, field excursions and social activities.

The ASL regularly produces a newsletter with notes on limnological activities, articles of general interest, book reviews and announcements of upcoming events likely to be of interest to members. Occasionally, it produces a Special Publication series and a Directory of Members.

Membership applications are welcome from any person with an interest in limnology. Five classes of subscribing membership are available:

Ordinary members	$ 20.00
Student members	$ 10.00
Life members	$200.00
Institutional members	Fees on application
Sustaining members	Fees on application

Membership covers the period from 1 July to 30 June and all members receive the regular and occasional publications produced by the society. Members may also choose to receive the Australian Journal of Marine and Freshwater Science, the Australian Journal of Zoology and/or the Australian Journal of Botany at special reduced rates. The subscription for each journal is based on the calendar year in which the subscription is paid.

Enquiries relating to membership should be directed to the Membership Officer:

Mrs Margaret Hart
22 Netherby Avenue
MULGRAVE VIC 3170 Ph. (03) 5604406 [Fax (03) 2113646]

CONTENTS

Editorial 2

Prattle, Rumour and Scuttlebutt 3

Important Notices 15

60 Minutes 19

An Important Notice from FASTS 21

Conference and Workshop Reviews 26

Mining in Kakadu and Biological Monitoring 31

The Floodplain Ecology Group 33

Book Reviews 34

A Scientific paper! - Distributions of predators and prey 39

Announcements 41

Letter to the Editors 42

Executive members and addresses 44

Material for publication in the September issue of the newsletter should be sent to the editors before the 23rd of August.

Contributions are welcome on any topic. Long articles should be forwarded as unformatted text, or as formatted text in any commonly used word processing package (e.g. WordPerfect, Microsoft Word, Wordstar - but please let us know which version). All those with Macs, don't worry, be happy, we can now accept your disks (see editorial). Mac users are, of course, wonderful caring environmentally sensitive human beings, but perhaps with a somewhat suspect sense of humour. Camera ready copy can also be sent (A5 preferred).

Cover: The cover shows a rather well-fed spangled perch *Leiopotherapon unicolor*, kindly supplied by Peter Gehrke. Any-one with other suggestions for cover art (which has generated a bit of correspondence in this issue) is welcome to submit it to the editors.

EDITORIAL

Your kind, generous, sweet-hearted editors now reside in two different States. The question is: to whom should you send your contributions?

In the first instance all material on IBM-compatible 5.25" diskettes should be sent to:

> Tim Doeg, Arthur Rylah Institute, Conservation and Environment, 123 Brown Street, Heidelberg, Victoria 3084

All material originating from an **Apple Macintosh** (yes! - The ASL Newsletter is now user-friendly, multi-computerable) and IBM-compatible 3.5" diskettes should be sent to:

> Leon Barmuta, Department of Zoology, University of Tasmania, G.P.O. Box 252C, Hobart, Tasmania 7001

You can now submit material to Leon by electronic mail using AARNET (it's free!). At the moment Leon@tasman.cc.utas.edu.au works; in about one month this will change to Leon.Barmuta@zoo.utas.edu.au.

Material on disk can be submitted in any major word processing format (e.g. MS-Word, MultiMate, WordPerfect, WordStar, MacWrite, Nisis, WriteNow). We can interconvert amongst most formats, but PLEASE tell us what package (and version) you used to produce your document. In addition, please include an ASCII copy (called Plain Text by most Mac programs) on your disk, and include a print-out of the formatted document. We will return all disks if requested.

If you can only submit hard copy, please note that we require such material **14 days before** the nominated deadline. We have to do the typing ourselves. Notice we have omitted our fax numbers from this little announcement. If you're desperate you can find them elsewhere in the Newsletter. However, if you can afford the time to type out a fax, then we reason you can put it onto a disk and thence into the mail. Australia Post is efficient (that's not a joke), and most stuff gets to us within two working days. So if you're pushed for time, by all means fax us, but please post a disk copy too.

We want to see more material from all members in the Newsletter. All this new wizz-bang technology now makes it all easier. Please get scribbling.

We won't keep you any longer. Complaints and compliments and suggestions about the Newsletter will be discussed over suitable social lubricants at the conference at Lorne. The Editors look forward to seeing you all there.

PRATTLE, RUMOUR AND SCUTTLEBUTT

VICTORIA

Correspondent: Barbara Downes, Dept. of Ecology & Evolutionary Biology, Monash University, Clayton 3168 (Fax (03) 565 5613).

Leon Barmuta, your previous correspondent, has departed for the former penal colony of Tasmania, appropriately as it turns out. Rumour has it that he left town shortly after a suspicious explosion at Melbourne University damaged a multi-thousand dollar, laser doppler, flow-measurement thingy. We wish Leon well in his new job at U. Tas. and promise not to tell Melbourne Uni. Engineering where to mail the repair bill.

Here at Monash, progress has become spasmodic since the realisation that chironomids seem to comprise 99.9% of Steavenson River samples (with the other 0.1% being worms). Sabine, Gerry and Sam are poised to begin the Lake Purrumbete/Curdies River disturbance project, but are somewhat daunted at the prospect of comparing a wet lake and a dry river bed. Downes-Lake Paving Contractors have now actually removed some bricks from the Acheron River with the completion of an ill-fated experiment on blackflies. Previous experiments have met sorry fates under horses' hooves and motorbikes or found their way into dams built (presumably) by small children. We were busy congratulating ourselves on escaping these particular demons when the upstream activities of a certain Government Agency [the true identity is under a D-notice, or should that be a DCE-notice - *Eds*] ruined the experiment before we could finish collecting it.

This now brings to three the number of field studies in Victoria known to have been decimated by various Government Departments in the last 12 months. Deliberate sabotage? Well, at the very least one must suspect serious communication difficulties. Is anybody else out there suffering from these problems?

Kim James reports some serious destruction of her own - 360 m of trenches dug for experimental pools for her saline wetland experiment. Unfortunately, Kim may have picked the 4th time in the last 65 years in which the Goulburn River declines to flood. Get wells to Paul Bailey, who broke his foot "falling down his rockery" - no comment. Gerry Closs and Nick O'Connor are still threatening to finish soon, and Michael Douglas has given up a serious career at the A.B.C. (really!) to start a Ph.D. on stream bugs at Kakadu. Nick will begin a temporary position at the Museum of Vic. in July, crunching O.W.R. data on the physical condition of Victorian streams - as Richard Marchant managed to avoid hiring a redundant tram conductor for the job. Gloomier news from C. & E. however - by June many contract staff may have joined the majority of Victorians on the dole.

Meanwhile, the freshwater studies group at the EPA is alive and well despite defections in 1990 to Sydney (Bruce Chessman, Helen Daly and John Saunders). Fiona McKenzie-Smith, back from the wilds of Nepal, is currently finishing off her biocide study of the Ovens and King Rivers and looking forward to reading papers that *don't* mention DDT. David Tiller has temporarily given up studying nutrient loading in alpine streams (hard work he claims, no junket!) and is concentrating on urban drains, sorry, creeks. Alison Pouliot, recently joined from LaTrobe Uni., has also been immersed in an urban creek, Darebin Ck, where she has been monitoring the recovery of the invertebrate fauna after a particularly nasty fish kill. Karen Barton, another new face, recently from Warrnambool, has done a great job putting together the 1989 yearly report on EPA statewide monitoring. She's been threatened with the 1990 yearly but is trying to escape into lake ecology or even into analyzing Corio Bay data. Leon Metzeling, also recently joined from the RWC, is finishing off his salinity work, with the assistance of Rhys Jones (no relation to the footballer - yeah sure Leon) and is also assessing the impact of fish farms (no Sam, not THAT fish farm) on streams. Graham Rooney tries to coordinate the doings of the above as well as do his own work on trace metals in groundwaters and *E. coli* at bayside beaches.

Meanwhile, back at the ranch, there have been some exciting times at the State Water Labs, which were blockaded recently by 400 beer-swilling farmers, some cows, a convoy of Range Rovers and a crayfish - a look-alike effigy of Minister Crabb. The farmers were protesting the new State Government water pricing policy requiring a 3% real increase in the cost of water for 1991/92. The protest must have had some effect - Roger Croome has resigned and gone bush to be a lecturer in Environmental Science at Wodonga, Rhonda Butcher has fled to the Museum of Vic. for 12 months (to work on an overview of conservation of non-marine inverts) and Kumar Eliezer has decided to lead a less dangerous life by visiting Iraq to study the effects of oil well fires on the growth of red algae. Additionally, Tanya Rankin and Jenny Lidston are both studying part-time for Science Degrees (with biology majors) at LaTrobe and Melbourne Universities respectively and only turn up for work every second Thursday for an injection of funds into the social budget. Remaining stalwarts Phil Mitchell and Harry Clark have responded to these desertions by upping the paper output, completing draft reports on Merri Creek and the impact of fish farms on plants in the Goulburn. Garry Bennison (now "acting Principal Scientist" - comments eds? [NO - *Eds*]) has produced a promotional brochure to advertise SWL's services and facilities, and Rhonda Butcher and Vince Pettigrove are soon to produce the first draft of "The Biological Monitoring Network Programme", which will see aquatic beasties and biophysical measurements taken from snags, pools and riffles at 55 sites in 6 river catchments twice yearly. Phew!

Sam Lake has just returned from the NABS meeting and 2 weeks of bug-watching and sunburn in the deserts of New Mexico. He will report on biology, the universe and everything in the land of the World's Policeman next issue...

PAPUA NEW GUINEA

Correspondent: Ross Smith, Environment Department, Ok Tedi Mining Limited, P.O. Box 1, Tabubil, P.N.G. Ph 675 58 332; Fax 58 9390

Despite sending faxs and making phone calls, I have received little input from the other Limnologists around PNG. Now that Paddy Osborne has left for the western parts of Sydney, the number of active contributors has been reduced to two for this issue.
Mathew Jebb from the Christensen Research Institute in Madang reports that Gerry Allen's book on the freshwater fishes of PNG should be on sale by now. Write to Dr Mathew Jebb, Director, CRI, P.O. Box 105, Madang, PNG for details. The work on the freshwater stromatolites is still ongoing, and David Larson from the University of Newfoundland is currently at the institute investigating the ecology of predaceous beetles in short lived pools. Mathew asked me to remind ASL members that the institute still has funding and rooms for researchers. It is a golden opportunity if you would like to work in a warm, picturesque environment on new and exciting things!

Here at the other end of the country there are a few new faces. Geoff and Melinda Day arrived in early May. Geoff has joined the Ok Tedi Environment Department, having left NSR in Melbourne. While working for NSR he did a lot of contract work in PNG, so it is not a total culture shock for him. Melinda is hoping to complete her Master's thesis, but as her new house is situated between the airport and the main heavy vehicle workshop, this may not be easy. Greg Bani and Mabi Dukawa have joined us from the Department of Fisheries and Marine Resources in Daru and Baimuru respectively, and Albert Yeviura has joined us from the Fisheries Extension Service in Angoram on the Sepik.

There have recently been two joint field trips between Ok Tedi Mining Limited and Porgera Joint Venture environmental staff. One was to replace a vandalised river gauging station on the Strickland River, and one was to sample at the biological stations in the delta. Both trips were quite successful, and it is hoped to combine our efforts more frequently in future.

To add slightly to the debate in the last newsletter, betel nut is the correct English spelling, it is more commonly referred to by the Tok Pisin word "buai".

SOUTH AUSTRALIA

Correspondent: Fran Sheldon, River Murray Lab, Dept. of Zoology, University of Adelaide, GPO Box 498, Adelaide 5001

Hot gossip and nasty rumours are few and far between in South Australia at the moment. Everyone seems to be either teaching, in the field or not answering their phones.

Keith Walker and Mike Geddes (Zoology Department) have been caught in the Semester 1 time warp of lecturing, frantically marking pracs, lecturing, marking pracs etc. and looked very distressed when asked what exciting things they had been up too since February. Prof. Williams returned from Bolivia and the Fifth International Conference on Salt Lakes in March, with some absolutely amazing slides (see his report on the Conference this issue). He returns to the USSR and the UNEP program on the Aral Sea for a few weeks in early July.

Andrew Boulton is setting his sights on arid streams, and has started by choosing the Flinders Ranges as his initial study area. Jim Puckridge is tackling the many complex issues of "Catchment Management" in the Lake Eyre Basin. A somewhat thankless task as he comes up against the many and varied threats to the region. I'm picking bugs.

Visitors to the Department of Zoology include Emily Stanley from Arizona State University, Arizona, USA, a Ph.D student of Prof. Stuart Fisher. Em's work includes the effects of drying on algal and invertebrate communities in desert streams. She spent two weeks in the Zoology Department, during this time she also visited the Flinders Ranges and forced Andrew Boulton to dabble in chemicals, nutrients and other nasties. Phil Aramugum, University of Pertanian Malaysia (Agricultural University), Bintulu Campus, Sarawak returned to the Dept. for a brief visit in April. John Hawking from MDFRC also called in for a few days to look at South Australian odonates.

In the Botany Dept. "nothing's happened" or so says George Ganf and Marcus Brownlow. I couldn't even coax them into making up some gossip. [Wimps! - *Eds*]

Limno's at the State Water Labs (E&WS) are keeping themselves busy with algal blooms in various lakes and reservoirs and their on-going River Murray wetlands project.

That's all folks, see you in Lorne.

SOUTHERN QUEENSLAND

Correspondent: Brad Pusey, CCISR Griffith University, Nathan, Qld 4111. Ph (07) 275 7111; Fax (07) 277 3759.

Much has happened in S.E.Queensland since I last put digit to keyboard (Nov 1989 by my reckoning). A number of new staff have joined CCISR recently on a number of new and continuing projects. Jon Marshall has been appointed as the Centre's Curator of Invertebrates (sounds good). This is a one year appointment and hopefully, by the end of it we should have names for all our bugs. Cathy Lamb has joined us from the Uni of Woollongong, to work with Jane Hughes and Stuart Bunn investigating gene flow within and between catchments for a number of species. Selina Ward has joined us from Perth, having just completed her MSc on coral reef ecology. Having seen the error of her ways she has foregone this highly over-rated environment to work in the Centre's artificial streams. There are now almost enough West Australians here to change the Centre's title, perhaps to W.A.Inc. Terry Flanders has left to pursue a career in education but has yet to undergo his first long term prac. He may yet return. Jan Mclean is with us still and continues to identify chironomids (and loving it).

A number of new students have begun research associated with the Centre. Mark Kingston has begun an Honours project investigating gene flow and the effects of barriers in *Paratya*. Martin Hancock has chosen to study the population dynamics and life history of *Paratya* in relation to varying hydrological regimes. Mark Kennard has started an MSc on successional changes in fish community structure of billabongs of the Normanby River and Martin Reid is investigating the feasibility of a PhD project on the Mary River Cod - the main criteria being whether there are enough fish to make it culinarily worthwhile. You may have noticed the low diversity of Christian names - this makes it easier for their supervisors. (Next years intake will be called Bruce). Paul Turner and Bernadette Kerby have almost completed their Honour's projects on the effects of fish predation on invertebrate community structure and invertebrate drift in rainforest streams respectively. Brad Congdon is shortly to submit his PhD thesis having realised that no matter how many *Gambusia* he grinds up for electrophoresis there are still plenty more left. Still, its been good fun.

Only a few visitors have passed this way recently. Both left their mark however. Bob Newbury and his wife Ruby stayed in Brisbane for a short while, conducted a workshop on stream hydrology, visited the Tully River/ Millstream project and advised the QEC. Seth Riece also joined us for a week in which time he visited Stradbroke Island and the Conondale Ranges, gave a seminar in the Division and met with students. He was forced to admit that the natural beauty of many of the areas he visited was eclipsed by the

Centre's artificial stream complex. The streams are now running again ready for another round of pesticide application in the middle of the year.

A number of the Centre's staff have been travelling around lately. Jane Hughes has been down to Sydney a number of times as part of a consultancy on Botany Bay. Angela has been to Canberra a number of times in her capacity as a committee member of LWRRDC. Stuart Bunn has been down to the MDFRC where he undertook some collaborative work with Paul Boon. Martin Read and I have spent a lot of time in the field with trips to Cape York in August, and the Burdekin River in November. I was due to return to the Burdekin River in February but was forced to cancel at the last minute due to slightly higher than average discharge. A little hard to find the study sites under 7m of flowing mud, let alone fish.

[Scribbled threat appended by correspondent: "Any editorial comment at your peril!". OK, never let it be said that we don't listen to our illustrious readers and correspondents. However, legal advice is being sought - *Eds*].

NEW SOUTH WALES

Correspondent: John Hawking, MDFRC, P.O. Box 921, Albury NSW 2640. Ph. 060-431002, Fax. 060-431626.

University of New England

Who says life doesn't ever progress out of the swamps? Last week at UNE we have had a proliferation of lagoon and swampy seminars in a variety of departments; Botany, Ecosystem Management and Geoplan.

The programme went like this:

Oh is there a lagoon there? Dorothy Bell (Diploma Project, Botany Department).
The ecology of charophytes. Michelle Casanova (PhD project, Botany Department)
Waterbirds Back O'Burke. Mike Maher (PhD project, Dept of Ecosystem Management).
Lagoons of the Great Divide and their uses in reconstructing past environments and landuses. Bob Haworth (PhD project, Geoplan department).

We, (in the Botany Dept) have also had a visit from Jane Roberts from CSIRO, Water Resources Griffith, who came to participate in the teaching of our undergraduate course in Plant Population Biology and to talk wetlands and research as well.

In between visitors, seminars, teaching and the other less mentionable facets of university life we are also keeping research alive. We have just finished the collecting the next set of samples for seedbank trials. New post-grad projects on wet heath communities, management of some local manipulated lagoons, and the response of aquatic plants to grazing are in various stages of design.

Next in our plans are the ASL and ASPAB meetings in July. See you there.

Inland Fisheries Research Station

All is fairly quiet on the home front at the Inland Fisheries Research Station at the moment. The fish breeding season is long gone, experimental work with larvae is long finished, and that unwelcome companion, writer's block, has arrived for the winter. Reproduction has filled Peter Gehrke's mind of late since the arrival of son Christopher. It was a hard day's work, but he generously admits that Joanne gave some assistance. No doubt she'll receive passing mention in the Acknowledgments.

Paul (alias "me".. next time John Hawking can leave his name off and I'll take the credit!) Brown has been out muddying the already turbid waters of the Paroo in search of juvenile fish spawned in the latest flood. The recently filled lakes are massive and perhaps a larger boat with a big motor would be put to good use next trip.

Sydney Water Board

At the Sydney Water Board, the Stream Studies Section is busy coming to grips with all the dreadful things sewage effluent and urban runoff do to the beautiful creeks in the Blue Mountains and beyond. In between winching 4WDs out of rivers, Michelle Boyd is looking at how the Nattai River recovers from the hefty dose of Mittagong's sewage it cops before flowing off into the wilderness on its way to Sydney's water supply. Ian Wright has thrown caution to the winds and plunged into identifying his innumerable vials of chironomids from his sewage-impacted and 'control' streams at Wentrowth Falls [Chironomid taxonomy?? You poor fool! Don't do it! Don't do it! - *Eds*]. Ian and Michelle recently contributed to the mingling of pure and applied and salty and non-salty research at the aquatic graduate students' workshop at Phillip Island. Ruth O'Connor is subjecting her water quality data on Katoomba creeks and rivers to all sorts of multivariate number crunching. Amanda Kotlash is busy sorting out how reliable are the chemical results obtained from automatic water samplers. Meanwhile, Peter Swanson's experimental urban runoff-treating artificial wetland at Katoomba has been invaded by vast flocks of wood ducks, which are playing merry hell with the nutrient budget.

University of Technology, Sydney

And now for some news on student projects, a number of projects have been completed over the last few months and several others are underway. Brendan Lewis and Kathleen Evans recently looked at the aquatic macroinvertebrate communities in relation to landuse in the upper reaches of the catchment of the Royal National Park. Brendan is presently having a great time at the OSS laboratories, at Jabiru, working on developing methods for sub-lethal testing of uranium mine effluent using gastropods as part of his Honours program. This is a research scholarship offered by the OSS. A number of Masters in Environmental Toxicology students too have completed their projects. Lisa Ashton working out of the Water Board completed a substansive [*sic*] study of the impact of the Winmalee Sewage Treatment plant on the Nepean-Hawkesbury River system just in time to have a baby. As part of her study she used Algal Growth Potential techniques to predict the effects of varying nitrogen and phosphorus concentration combinations on algal growth. Sharon Peterson has been dosing microcosms with endosulfan to look at its fate while Julie Harris completed an interesting study on absorption rates of radionucleids in the mussel, *Velesunio angasi*.

In the meantime ongoing projects are water quality studies of urban creeks by Warwick Hayes; impact of the Mittagong Sewage treatment Plant on stream invertebrate communities by Michelle Boyd; status of endosulfan in the sediment of drinking water dams in northern NSW by Julie Crowley; effects of heavy metals on early life stages of fishes in Sydney creeks by Effie Howe; recovery of macroinvertebrate communities after logging by Peter Jones; impact of mine waste pollution on macrophytes of the Daylight-Williwa creek systems near Bathurst by Juanita Higgs; and behavioural and physiological responses of *Velesunio angasi* to toxic components of uranium mine waste by Scott Markich .... but more about them later.....

Murray-Darling Freshwater Research Centre

Life at the "Centre" remains hectic and should continue that way, now that we have been promised renewed funding. The more notable activities have been the arrival of Lotte Madsen from Denmark, visits overseas and local scientists, and the commencement of new collaborative projects.

Ralph Brinkhurst, the "Guru of Worms", visited the Centre for a few days and after few "reds", consented to identify some of our voucher species. Ralph has agreed to present the 1993 taxonomy workshop, at the Centre, which should hopefully erase the fear that everybody has of worm identifications. While on overseas visitors, Seth Reice dropped in and gave an excellent seminar on stream disturbance (apparently the Acheron is not the only disturbed stream, sorry Tim) and in return was given a scienic [??! - *Eds*] tour of the local streams.

Lotte Madsen, a post graduate student from the University of Aarhus, in Denmark is spending four months at the Centre. Lotte is working on methane oxidation in billabong sediment with Paul Boon and Brian Sorrell.

Ian Webster and Brad Sherman (Environmental Mechanics) have spent the past week, with Rod Oliver, investigating turbulent mixing in Rushy Billabong. Peter Cranston spent a week at the Centre finishing off the project on chironomid exuviae with Terry Hillman and Rob Cook. Daryl Nielsen is nearing completion of the project "Effects of gold panning on macroinvertebrates in the Buckland" for Conservation and Environment. Brett Ingram (Snobs Creek Fish Hatchery) and John Hawking are collaborating on a project to investigate the life histories of dragonfly larvae, which are preying on the fish fingling [No, that word's not ours either - *Eds*] at Snobs Creek. They hope to establish some guidelines for the fish farmer [Just the one? - *Eds*] to manage the dragonfly larvae.

NORTHERN TERRITORY

Correspondent: Bob Pidgeon, ARRI, Jabiru, NT 0086.

Ruminations from Coronation Hill, 23/5/91

Well - the bulldozers have finally arrived at Coronation Hill; not to dig it up but to improve the road and make a day-use area for *tourists*. Obviously someone knows something that we mere environmental scientists don't. Fittingly, one of the gravel trucks has the comment written in red dust on its back: *Bulla was here.*

Yesterday I heard on the radio a senior government politician quoted as saying "there are no environmental concerns for the Coronation Hill mining project". It made me wonder why I was here counting fish all day [Yeah, why don't you do a *real* job: identifying chironomids - *Eds*]. Then I realised that he had probably just read a recent mining company glossy leaflet on mining and the environment and now believes that mining is actually *good* for the environment.

Ah well... it's a worry! I guess I'll just sit back in my deck chair at the OSS field station and enjoy the sunrise changing the face of Coronation Hill from its somber pre-dawn grey to the lovely ochre tones of the Kakadu escarpment... again. It's a great place for a cup of tea.

By the time this newsletter goes to press the Coronation Hill controversy should be over one way or the other. But for how long?

ARRRI has been conducting baseline studies of fish and aquatic macroinvertebrates in the upper South Alligator River near Coronation Hill for the past 4 years now. These studies will assist in the development of long-term biological monitoring programs. The future of these programs will depend on next weeks's decision by government [but only after they decide on a Prime Minister - *Eds*]. If, as seems likely, mining will not proceed, we can only hope we have the funding to analyse the data and write them up. With this in mind, Peter Dostine has been spending much of his time trying to catch up as much as possible on his backlog of invertebrate samples from the upper South Alligator River as he can before this decision is made.

Jabiru Dreaming From Chris Humphrey.

Meanwhile, back in the real world of Jabiru, exciting things have been happening. When it finally began really raining in late December it just didn't stop (a slight exaggeration) for two months. This kept Magela Creek monitoring stations with a very soft floor on several occasions. Fortunately, it was still possible to keep the stations running. Honours students Kelley Jones from New England and Jane Suggit from Newcastle University were less than grateful and at the time of writing were still waiting for a day "off". With the creek now down to a trickle, their projects on aspects of the biology of the snail *Amerianna cumingii* and its use in biological monitoring of waste-water releases, are being wound up. Another Honours student, Brendan Lewis from Sydney University of Technology carried out toxicological field studies on 5 snail species in order to identify the most suitable species and end-points for toxicological and field monitoring work. His project is now also completed. All three projects produced interesting and very useful results and we wish them well with the remainder of their Honours programs.

Ross Hyne and Greg Rippon are busy writing papers while the ARRRI toxicology lab gets ready for the forthcoming NATA certification. Both feel they should be certified instead! Greg is still awaiting the imminent arrival of baby Rippon(s). It's a pity he can't manage his wife's birth dates like he can those of his water fleas.

Alice Wells has made repeated visits to ARRRI from Darwin despite efforts to keep her away by feeding her a steady diet of light-trap contents [glad we're not invited over for dinner - *Eds*]. Her big find this Wet season was parasitism of hydropsychids by a species of *Orthotrichia*.

Across the fence at Ranger Uranium Mine, John ('Door-prize') Bywater has been promoted to Environmental Superintendent. See - those buffalo horns really do work. Congratulations, John.

WESTERN AUSTRALIA

Correspondent: Adrian Pinder, BES, Murdoch University, Murdoch, W.A. 6150.

Samples are still being sorted, invertebrates identified, data deciphered and reports written by members of the stream and wetland ecology group at Murdoch University. In particular, Jane Growns, Faye Cheal and Belinda Robson have almost completed their lab work and are beginning to digest large volumes of data in order to classify their 40 wetlands with respect to invertebrates and water chemistry. Belinda will leave the project in May to travel and then undertake further study. Shirley Balla is nearing completion of her Ph.D. thesis on the hydrological requirements of the invertebrate and fish fauna of Perth wetlands, and would like to express her desire for employment.

Two new Ph.D. students have commenced work on their respective projects at Murdoch. Lorna Charlton aims to examine the ecology of odonates in relation to exotic plants in the Millstream wetlands of the Pilbara, while Declan Morgan is investigating aspects of gilvin in Perth Wetlands.

Kerry Trayler, Jenny Davis and myself are writing the final report for the chironomid control project (hence the brevity of this news update), which is coming to a close in June.

Paul Humphries has taken leave of [his senses? - *Eds*] the fish research group at Murdoch, to study fish and invertebrate communities with the Inland Fisheries Commission in Tasmania. Meanwhile, Luke Pen has finished his Ph.D. project on the biology of native and introduced fish in southwestern Australia. He is currently working with Mellisa Hewite on studies of the black striped minnow (*Galaxiella nigrostriata*) and the freshwater cobbler (*Tandanus bostocki*).

TASMANIA

Correspondent: A Macintosh Nerd (Formerly known as Dr Pierre Horwitz, Department of Geography and Environmental Studies, University of Tasmania, G.P.O. Box 252C, Hobart, Tas 7001)

New correspondent: Leon Barmuta, Department of Zoology, University of Tasmania. Phone (002) 20 2785; Fax 20 2745; e-mail: Leon@tasman.cc.utas.edu.au

Crowds flocked to somewhere in Hobart recently when it was announced that the migratory *Leonicus barmutans* had negotiated Bass Strait successfully. Now perched on

the top floor of the Life Sciences Building, well above the murky operations of the real campus, Leon diligently puts typeface to grant application form, looks for nesting material (house), and can be seen every now and then with an unsettlingly bemused look on his face. It seems, in true Tasmanian style and reminding one of scenes from a current Royal Commission, that everyone in Tasmania knew about Leon's arrival before Leon had managed to tell anyone. But his is one migration that is definitely Tasmania's gain [Raises the IQ of both states if you ask me - *another Ed*]. Not long after, just as the morphic field of Tasmanian limnology was resonating a little more evenly, it was thrown into complete turmoil by the perrenial Jean Jackson who thought that April was a good a time as any to submit her thesis. And so she submitted it. Systematics and caddis-flies of the conoesucid and related types. We wish her well. Hopefully, next time Jean submits something, she will create at least a little bit of noise. Not like Humphries. Excellent to see you back in Hobart Paul, but really.... Three minutes after landing at the airport most of Hobart could hear him, yacking away, abusing people, coughing, ordering people around, laughing, dropping clangers. On and on it went. Still going on. Except it's got louder because he's baled up in a pokey little room at the Inland Fisheries which is beginning to look like a refugee camp on the Iraq/Turkey border. Gee, I hope the authorities don't get to hear about this one. There's about a dozen people, four laser writers, seven Macs etc. in each room, and that's before they get visits from the Minister's office. Blue stickered ministerials appear through the roof. This probably explains why Peter Davies has started writing applications to international aid agencies asking for rice. There's so much going on at the IFC at the moment that anything short of a monograph would not be doing it justice. I'll leave it to the next issue so that we can get our facts straight. One extra smart ex-IFC freshwater exponent is Rob Sloane who left before the population explosion. Rob's putting the final touches to what promises to be a very interesting piece of work (a management plan for trout in the western lakes, Central Plateau, within the World Heritage Area). Another report due out any minute now is the Tasmania-wide cave fauna study, on which Stefan Eberhard has been working feverishly. One gets the feeling that this will be a landmark piece of research...

Meanwhile, at Geography and Environmental Studies, Marg Brett continues her Orielton Lagoon eutrophication study, Greg Blake battles against apparently unexplored analytical and statistical procedures in the phinal phases of his write-up on farm dams, Clive Jenkins has started a project on chemical loads carried by stormwater in Hobart, and recently students were seen terrorising residents of Kimberley in the north trying to find out why the warm springs there are so stuffed. In Zoology, Vera Wong has completed her Honours work on plant/animal interactions in buttongrass plains.

Finally, correspondents in Tasmania were thrilled to receive a handwritten scrawl from a John Boulton in Adelaide, and would like to say how wonderful it was to hear from him, and that he is safe and well. What's the matter Andrew? Postage too dear in the US?

IMPORTANT NOTICES

FASTS AND ASL

A meeting of representatives of the Aquatic Sciences Group members of FASTS (AMSA, ASL, ASPAB, ASFB and ACRS) was held at the University of New South Wales in April. The chief purpose of the meeting was to discuss our continued involvement with FASTS and, in particular, ways in which we might make more effective use of this body, either as an "Aquatic Sciences" group or as individual societies.

It was clear from the outset that ASL is not alone in doubting the value of maintaining its membership in FASTS. However, this assessment may be a little premature - FASTS can hardly be criticised for not having done much on our behalf if our societies have not asked it to do anything!

How can we use FASTS and justify maintaining our full membership status? FASTS is undoubtably the appropriate vehicle if we wish to lobby Canberra on any number of issues, including funding (and the lack thereof), research priorities and the environment. As an example, ASL has already requested assistance from FASTS to lobby the LWRRDC (formerly AWRAC) on our behalf for inclusion as a Representative Organization. While we have been unsuccessful to date in becoming a Representative Organization, we are continuing to seek the support of FASTS in this matter. In the present economic climate, it is important for ASL to play a role in influencing government and relevant funding agencies to support the activities of its members and to protect our aquatic environments.

In this regard, ASL has a lot in common with its sibling aquatic societies. All face similar problems of funding; e.g. the abandonment of the MST grants scheme has seen a direct reduction in research funding in the marine sciences; the "corporatisation" of FIRTAC (formerly FIRTA) will inevitably see changes to the funding of fisheries research. Other issues, e.g. the recent battle over scientific diving, will also affect members in all aquatic societies. The purpose of the April meeting was to identify objectives that were shared by all aquatic societies and to examine ways in which we can, as a group, use FASTS more effectively to achieve these objectives.

The meeting resolved to present a package of requests to FASTS on behalf of the Aquatic Sciences group of societies. These include lobbying for (1) better representation of the aquatic sciences on ARC and ABRS and inclusion of relevant societies as representative organisations of the LWRRDC and FIRTAC; (2) input into the membership of various advisory bodies, e.g. the proposed Federal EPA; (3) increased funding for the aquatic sciences and how such funds might be raised and administered. This package is to be presented as a "test case" to see whether FASTS can effectively lobby on our behalf.

While it is acknowledged that some of the proposed objectives are long term, we hope that this will give us an idea of the effectiveness of FASTS when we actually seek their support.

ASL members will get the chance to vote on our continued involvement in FASTS at the next Annual General Meeting. If we continue our membership, the anticipated increase in our subscriptions will have to include the rise in FASTS subscriptions (from $2.50 to $3.80). Members of more than one society will still be obliged to pay this fee for each society represented by FASTS. While this may seem unreasonable, one consolation is that this would give an aquatic sciences group a disproportionately higher representation.

If we do vote to retain full membership of FASTS, we should consider the possibility of forming an Aquatic Sciences Council with the other aquatic societies. The major advantage of forming an Aquatic Sciences Council would be greater representation on FASTS and, with the combined membership of the 5 societies, a louder voice than any single society. This of course would not preclude any society from approaching FASTS independently on any particular issue. The function of such an Aquatic Sciences Council not only would be to represent the common interests of all aquatic societies but also to provide united support for issues that may effect members of single societies. In the case of small aquatic societies such as ASL, this can only be to our advantage.

The current FASTS representative of the Aquatic Sciences, Dr Jason Middleton (President, AMSA), will table our submission at the next FASTS meeting later this month. I hope to be able to report on any progress at the Lorne ASL General Meeting in Lorne.

Stuart Bunn (3 May 1991)

SPECIAL PUBLICATIONS

Two proposals are currently under consideration as Special Publications of the Society. The first of these, hopefully to be completed this year, will be a guide to the Trichoptera of Australia. This publication will provide keys to families and genera of the adults and larvae of this diverse insect group and will include contributions from David Cartwright, John Dean, Jean Jackson, Arturs Neboiss, Ros StClair and Alice Wells. The Murray Darling Freshwater Research Centre and particularly John Hawking provided the catalyst for this project in the form of their successful taxonomic workshop series.

A second proposal from Tim Entwistle and colleagues is for the publication of a guide to the macroalgae, macrofungi, lichens and bryophytes of Australian inland waters. This is

still in the planning stage, however, the manuscript is scheduled for completion at the end of 1992 and is intended as a Special Publication in 1993.

In the meantime, I would welcome any additional submissions or proposals for consideration as Special Publications of the Society. Interested parties should consult the revised instructions for authors, published in the Newsletter (Vol 27, no 4) or contact me for further details.

Stuart Bunn (Editor)

ADVERTISING IN THE ASL NEWSLETTER

With the success of the last issue containing advertising material (i.e. we got some bucks out of it and members got the opportunity for a good deal), we have finalised the price list for advertising in the newsletter (see below). The rates are in line with those charges by the Ecological Society of Australia for inclusion in their bulletin. These apply to items which, in the opinion of the editors and the executive, are not directly applicable to members of the society or are commercial rather than academic ventures. Of course, there is no charge for the notices and announcements of forthcoming limnological conferences or items of specific interest. Anyone who is interested in advertising should contact the editors or the Secretary.

Type of ad	Per single issue ($)	Per 4 issues ($)
Full page	60	180
Half page	35	105
Quarter page	24	72
Insert (A4 page)	200 (Maximum of 2 per issue)	

EXPORT OF SPECIMENS AND DEPOSITION OF AUSTRALIAN TYPE MATERIAL

All scientists should note that *it is illegal* to export specimens of native Australian flora and fauna without a proper permit and to other than an approved overseas institution. Species under schedules 1, 2 and 3 of the *Wildlife Protection (Regulation of Export and*

Import) Act 1982, CITES, CONCOM, and certain birds and cetaceans are under special strict regulations.

The main points in the export regulations are:

* Export for research purposes can only be undertaken with permission from ANPWS. Permission must be obtained for each transaction.

* Scientific institutions registered with the ANPWS for the purpose of the *Facilitated Exchange Transaction* scheme are authorised to undertake routine export and import for research in accordance with the "Conditions of Authorities Held by Registered Scientific Institutions under the Act".

* Material can only be exported to institutions approved by the ANPWS.

* Primary types of Australian material exported under the Act *must* be returned to Australia for lodgement in an approved repository.

For further information contact: ANPWS Wildlife Protection Authority (06) 250 0290.

A SAD LOSS

Bill Williams has informed us of the death of the premier limnologist, G.E. Hutchinson, who died in London on 17 May 1991.

ICPALSN*

SCHOLARSHIP AVAILABLE

A scholarship for a PhD degree is available to anyone interested in looking at the effect of temperature on the toxicity of chemicals on native and introduced fish. The project will be based at the Inland Fisheries Research Station, Narrandera, NSW. For further information please contact either Peter Gehrke (069) 591 488, John Chapman (02) 330 4151 or Richard Lim (02) 330 4037.

* - In the Classified Pages of the ASL Newsletter

60 MINUTES

Executive meeting by teleconference, 1 March 1991 (meeting began at 5.00pm)

Present: S.Bunn, R.Oliver, L.Barmuta, S.Halse, P.Horwitz, R.Congdon, B.Pidgeon, M.Hart, R.Marchant, J.Hawking

Apologies: P.Davies, R.Norris, F.Sheldon

1. Lorne Conference: M.Hart is still waiting for a response from Australian Airlines as to whether they will give the ASL two free air tickets and when they can print the conference brochure. She hoped the brochure would be ready by mid-March. Conference abstracts will be included in the newsletter (probably the issue produced just before the meeting) for the benefit of those members who will not be able to attend. Conference guidelines will be produced by the secretary and M.Hart after the conference.

2. Finances: M.Hart reported that the ASL had:

   a) $34,683.56 (at end of Jan) in an ANZ Trustees account;
   b) $12,700.00 (at end of Jan) in a NAB current account.
   c) J.Davis recently informed M.Hart that the ASL still had $800 in a WA bank account remaining from the 1985 ASL congress. After some discussion it was agreed that the money should be placed in the ASL account in Melbourne.

3. Sponsorship of workshops: R.Oliver suggested that interest from the ASL's accounts should be used to sponsor limnological workshops, e.g. taxonomic workshops of the sort held at the Murray-Darling Freshwater Research Centre. He acknowledged that this would result in an erosion of the capital held by the society but argued that the society should use its money for such obviously worthy causes. M.Hart felt that provided the trustees account, which would be used for such activities, could be held at about $25000 (currently $34689) then the society had adequate reserves. In the ensuing discussion it was suggested that the ASL should publish any keys that resulted from taxonomic workshops and that the executive should ensure that money was equitably distributed among the various groups within ASL who might apply for sponsorship. Joint conferences with other societies might also be supported with this money. The guidelines drawn up by R.Oliver concerning sponsorship will be published in the newsletter and members will be asked for comments.

4. SIL Congress in 2001: Prof W.D.Williams has informed L.Barmuta that he wishes to propose the Adelaide Congress Centre as a venue for the SIL Congress to be held

in 2001. The executive decided to postpone discussion of the proposal until the AGM at Lorne. In the meantime S.Bunn will discuss with Prof Williams the suitability of the Congress Centre for such a meeting.

5. Promotion of the society: S.Bunn suggested that a poster promoting the society and its interests should be produced. He also thought that the membership brochure should be rewritten as it is now about 10 years old. All aspects of limnology must be emphasised in these publications, otherwise there was a risk that splinter groups could form within the society. S.Bunn agreed to investigate the production of a poster. M.Hart and R.Marchant will get the brochure reprinted.

Meeting ended at 6.00pm.

R.Marchant, Secretary.

"You know what I'm sayin'? . . . Me, for example. I couldn't work in some stuffy little office. . . . The outdoors just calls to me."

FEDERATION OF AUSTRALIAN SCIENTIFIC AND TECHNOLOGICAL SOCIETIES INC

Office of

The President
GPO Box 2181
CANBERRA ACT 2601
Ph: (06) 247 3554
Fax:(06) 249 6419

21 May 1991

TO FASTS' BOARD, EXECUTIVE AND MEMBER SOCIETY CONTACTS

COVERING NOTE TO SCIENTISTS AND TECHNOLOGISTS

As a relatively small and isolated community, scientists and technologists are unable by ourselves to change the forces that are destroying science and technology in Australia.

We need to reach out to the wider community to gain their support. We need to touch first upon their concerns and relate these back to science and technology. This document is aimed at the consumers of science and technology in whose interests and ours science and technology must be vastly improved in Australia.

There is an urgency to this. We are not just losing our ability to undertake research and development, we are losing our capacity to train the next generation of Australian scientists and technologists.

The process of developing a document from the science and technology community to the wider community will require considerable negotiation, and some inevitable compromises. However, I believe our survival depends on this. Whatever the political outcome of the next Federal election, we need to change the dominant culture in the most influential Government Departments, both Commonwealth and State.

As a first step, I ask you to consider the attached document very carefully to see if you would want FASTS to negotiate support for it with people in industry, the environmental movement, parents - the wider community as a whole.

Please have your responses back to FASTS by 31 July. We will start our consultations in August.

Professor Tony Wicken
President

SEARCHING FOR OUR FUTURE

THE PRESENT SITUATION

For Australia to reap the world-wide gains of science and technology we need to provide the right environment for our own people working in these areas, to produce their own work and adapt that of others.

The essence of science and technology is the search for truth and pushing forward the frontiers of knowledge. This work is increasingly vulnerable in a world more intent on a quick economic return whatever the cost.

Economic control of science and technology would favour drugs to treat AIDS not vaccines to prevent it, or government clean-up of pollution not regulations to prevent it. Real economic gain in Australia's interest is based on long-term investment and the development of a strong science and technology team. We also need improvements in health, the environment and knowledge.

The concentration on short-term economic gains by our great centres of science and technology, principally the CSIRO and the universities has coincided with a dramatic shift in our fortunes. In terms of research and development Australia has slipped from average in the middle level of OECD (developed) countries to the lowest category.

WHAT WE SHOULD DEMAND

As responsible citizens, we should demand:

* sustainable growth with high employment and a better distribution of rewards;
* responsible management of the environment;
* improved health and safety of the people;
* a better-trained and more highly rewarded workforce;
* Australia back as leader in the development of new areas of knowledge;
* a better-informed community able to make rational decisions about the environment, health, and the use of resources.

THE PEOPLE SHOULD SET THE GOALS, SCIENTISTS AND TECHNOLOGISTS FIND THE WAYS

Science and technology have a role in each of the above demands. But it is ultimately people who decide whether science and technology are used to wage war or improve the quality of life.

There is a dynamic to science which can drive its direction in the pursuit of knowledge. This is what makes it exciting. However, science aims to accept and reflect the ethical standards of the responsible community.

Science and technology are often in a position to point out the problems. Many of the current ecological problems have been those uncovered by scientists, who should also contribute to community's thoughts on solutions, however, this needs a re-emphasis of direction.

WHY THE CURRENT POLICIES WILL FAIL

The current policies address mainly a small part of science and technology, concerned with short term money making, not the long term building up of industries, let alone the environment or the health of the people.

Australia has been treated as a "branch-office" of first England, then the US and now North East Asia. We have very few large international companies of our own to develop our science and technology on a global scale. The research is there. The money to develop it often is not.

Our economic policies have made "patient money" very scarce. Interest rates are high. Some large companies owe large sums of money overseas, and the Australian dollar is not fixed. This makes it hard for exporters to plan. What was a saleable product at US70 cents might be too expensive at US78 cents.

We need a change in economic thinking to accompany a re-alignment of science and technology, to long-term economic development, and towards goals not just linked to the economy.

THE THREE PARTS OF SCIENCE AND TECHNOLOGY - "BASIC", "STRATEGIC" AND "APPLIED"

When Australian Medical Nobel Prize winners such as Florey and Eccles received their awards nobody could see any application for their work. They had merely pushed forward the frontiers of knowledge. Now their work has very wide application in penicillin and other drugs.

The CSIRO was established to provide answers for problems that existed originally in primary industry but now also in manufacturing and service industries. Not always the problems were known and mostly the answers were unknown. CSIRO research is termed "strategic" research because it is aimed in particular areas. Of course it interacts with fundamental research.

Strategic research might address long-term issues such as the salinity of the water in the Murray River basin, or relatively shorter issues of trying to cope with the infestation of rabbits Australia presently faces. CSIRO coped with this before. It will do so again.

The third kind of research is "applied" research where industry has a particular problem or need. There is a general notion of how it might be solved but the exact details need to be worked out. This is often carried out by industry itself but sometimes in collaboration with the CSIRO and/or universities. An example of this is CSIROSMELT, a highly successful metal extraction process now being used by Mount Isa Mines.

As science and technology becomes more sophisticated, the distinctions between the three kinds of research can become blurred particularly in areas such as biotechnology. A new way of determining characteristics of a plant might very quickly produce a new species that industry can market overseas almost immediately. An example of this is Geneshears, produced by the CSIRO.

THE VALUE OF ACHIEVING A PROPER BALANCE

Until the environment, health and safety, training and knowledge issues gain a proper place in science and technology policy, short-term economic considerations come first. With almost no patient money to provide development and marketing, research is seen as fairly irrelevant. Research and education in mathematics, science and technology are consequently being starved of resources. We must change this.

WHAT IS NEEDED BY SCIENCE AND TECHNOLOGY

Excellent science and technology requires very good people with good ideas and the environment in which to develop both.

To achieve this we need good career paths for scientists and technologists. To attract the brightest of our people we need the rewards in science and technology to match those in other professions. Not necessarily dollar for dollar. There is an excitement in science and technology that perhaps does not exist in other professions, and that is a very real reward. But it does not pay the mortgage. There has to be a balance of intrinsic and extrinsic rewards.

Scientists and technologists need up-to-date equipment, access to the latest techniques and up-to-date information. This generally means contact with their national and international colleagues. Much of the latest equipment is so expensive it must be shared nationally and internationally, although there is still the need for basic equipment at home.

Many scientists and technologists work in buildings that would be unacceptable to other professionals. Often special equipment needs particular housing. Madame Curie did not discover radium because she worked in a tin shed. She discovered it despite that fact.

THE CONSEQUENCES

If you make decisions to improve science and technology you will need much higher investment in schools, universities and the CSIRO. You will require much greater accountability of industry about how it spends government funds. You may need to consider higher taxes for those on higher incomes, greater control of the Australian dollar and some interference with the "free-market" ideologies of the present people controlling Canberra.

These are decisions you have to make, and crucial to that process is this question. Do you see education, science and technology, research and development as costs or investments?

And if you see them as investments do you want some of your taxes and some of your superannuation funds to be invested carefully in these areas?

CONFERENCES AND WORKSHOPS IN REVIEW

STREAM HYDROLOGY WORKSHOPS (1990)

By Nancy Gordon, Centre for Environmental Applied Hydrology,
Melbourne University

Two workshops in applied stream hydrology were held by the Centre for Environmental Applied Hydrology in January and February of this year. Dr. Robert Newbury, a stream hydrologist from Canada who gave a workshop with CEAH in 1989, returned with his desktop flume, a take apart catchment contour model and his interdisciplinary communication skills to again enlighten attendees about the hydraulics and hydrology of streams.

The first workshop, held near Marysville, was similar to the 1989 *Habitats and Hydrology* workshop, with lectures given on the description of habitats at the catchment, reach, local and boundary scales. Topics in hydraulics, hydrology and geomorphology were covered by CEAH staff, and Leon Barmuta, Sam Lake, and the team of Richard Marchant and Peter Lillywhite provided insight on near-bed flow environments, the Acheron's aquatic ecology and freeze-coring respectively. The field demonstration of the latter technique was quite dramatic, with snowflakes spouting from the top of the probe - these also tended to stimulate the rain clouds into immediately producing a torrential downpour. Although the higher flows added challenge to some of the stream surveys the next day, it made it much easier to estimate Manning's n for near-bankfull conditions! After the field data were analysed by the participants, Bob Newbury then summarised by giving several examples of how the data can be used in the conservation, management and rehabilitation of streams.

The second workshop, *Stream Rehabilitation*, provided more detail on these applications. It was co-sponsored by CEAH and the Dandenong Valley and Western Port Authority, and focussed on the control of erosion in streams using more "environmentally friendly" and cost-effective solutions (primarily rock chutes; i.e. "riffles"). Scott Seymour and Tim Fisher from the DVWPA discussed previous and proposed works to control the erosion heads which have resulted from channelisation of the lower reaches of streams emptying into Western Port Bay. They and Juliet Bird outlined the historical changes on the Lang River where extensive erosion has lead to dramatic incision of the stream and deposition of enormous volumes of sediment into the bay, affecting both stream and marine habitats. A number of local authorities gave an intensive overview on some of the considerations in stream rehabilitation designs: hydraulic, biological, economic and political. The diversity of views on rehabilitation works was brought out in a role-playing exercise led by Patricia Geraghty. In it, John Tilleard proved that engineers do think about biology by pleading

the case for stream biota as Lolita Leptophlebiidae, the local mayfly nymph and spokesorganism.

After a few field tours to see various stream stabilisation works, participants were divided into multi-disciplinary groups to do rough field surveys within the Lang Lang basin and develop recommendations on how their assigned site should be rehabilitated for the "design" species, river blackfish. John Koehn's lucid presentation on the creation of diverse velocity zones (including such slogans as DIVERSITY IS GOOD, STREAMS SHOULD LOOK MESSY, and FISH NEED TREES), made an impact on the recommendations, which included battering to create the proper hydraulic geometry, fencing and revegetation. the addition of logs to improve pool and spawning habitat, the provision for flooding on the floodplain to reduce pressure on the channel, and the construction of rock riffles with wave forms on top.

Bob Newbury summarised by saying that when he had asked previous attendees what they had learned from his workshops (he has now led 27 of them), they said that they were able to ask better questions. From the amount of spirited interaction taking place at the workshops, it was obvious that this goal had been achieved.

FIFTH INTERNATIONALSYMPOSIUM ON SALT LAKES

By W.D. Williams, Department of Zoology, University of Adelaide

The fifth International Symposium on Salt Lakes was held at the Hotel Titicaca, Bolivia, 22-29 March 1991. many of the participants, heeding the advice of the organizers about the effects of altitude, arrived in La Paz a few days before the actual symposium. It was good advice: high altitude (>3000 m ASL) definitely did have an effect on many if not all of the participants in the form of headaches, lethargy (greater than normal, that is, for some), shortness of breath, loss of sexual appetite (I'm told), occasional fevers, etc. Most participants suffered a day or so; a few malingered on for longer.

The proceedings opened officially on Sunday evening (17th) in the lecture room of the Hotel Titicaca with welcome and introductory speeches to the fifty-odd participants by Carlos E. Arze and Stuart Hurlbert and, on behalf of the Republic of Bolivia, by Ing. Gerardo Aguirre Ulloa. The scientific sessions began on the Monday (18th), appropriately, with a series of papers dealing with the Altiplano, Lake Titicaca and several Bolivian salt lakes. The voluminous amount of published work on the lakes, copies of which were given to all participants (organized by Simone Servant-Vildary), were greatly appreciated. The afternoon session on Monday was of wider geographical ambit: papers

read concerned salt lakes in Chile, China, the USSR, southern Africa and Australia! Tuesday's session contained papers dealing with salt lakes as equally widespread globally: lakes discussed were in israel, North and South America, Europe, Mongolia and Africa.

Wednesday was a day (and night) of informal discussions (ahem!). There was a visit in the morning to the Isla de Siriqui to see the production of reed boats (from *Scirpus totora*), and made famous by the Kon Tiki and other explorations. In the afternoon, there was a glorious folkloric band. In the evening there was another equally good folkloric band and a dance. As for the dance: well, Latin-Americans can certainly move in ways that others can't. Whatever the case, during the evening the older participants discovered they were younger than they thought they were; the middle-aged participants found they were not as young as they thought they were; and the young discovered they were not too old to behave as young as they were! A good time was had by all, especially one participant who had to be carried to bed (nameless, of course).

Thursday was back to solid science. There were two sessions, one focussing on biochemical issues and algal physiology and ecology, and one on zoobenthos and zooplankton. At the evening business meeting, the following matters were discussed: manuscript submission and publication; the nature of the ICSLR and its relationship with SIL and the triennial salt lake symposia; SALINET; the proposal to launch a new journal dealing with salt lakes; and the venue for the next symposium.

One of these matters is most conveniently raised here and relates to the venue of the next Symposium. Three invitations were received (with applause): from Drs. Peter Ashton and Jenny Day (Botswana and Namibia), from Professor Zheng Mianping (China), and from Dr. Nikolai Aladin (USSR). These colleagues will send further details of their invitation (cost, timing, venue of symposium, place of post-symposium expedition) to a small committee (Williams, Nissenbaum, Hurlbert, Comin) which will then refer the matter for further consideration to the full membership of ICSLR.

Friday morning's session included papers dealing largely with the impact of humans on salt lakes, and the afternoons session with avian biology. Friday evening was partly taken up with an open discussion of conservation issues, and from it a small committee (Herbst, Carney, Hurlbert, Williams) was convened to implement a resolution on conservation of salt lakes agreed to unanimously by the participants (see below).

Friday evening was also the time when the symposium was officially closed and participants had the opportunity of thanking both the organisers of the symposium and the Hotel Titicaca management and staff for the splendid organisation of the symposium and hospitality within the hotel. A single word to repay their efforts is unjust, but anyway, **THANKS**.

A week-long expedition to lakes on the Bolivian Altiplano followed the symposium. I will not be explicit on details: those that went on the expedition had the experience of a lifetime, and don't need to be told that; those who didn't - well, there's no point in telling them what they missed! I note only that we saw some magnificent scenery, visited a large number of salt lakes, travelled to over 5000 m altitude, lived dangerously near boiling mud and thermal geysers, were transported many hundreds of kilometres in the backs of trucks, on the tops of buses, and in our own private train (yes, train), broke down *en route* to La Paz, were grossly overfed, and met some marvelous Bolivians. Members of the expedition even beat the Bolivian Army - at soccer, that is. In a well fought match, in which the best of the army were pitched against our finest, the expedition at last prevailed. Outstanding performers were Carlos Jiminez and several anonymous players from South America (names withheld in the interests on continental peace).

Finally, a word about participation. Thanks to support from a number of sources, a comparatively large number of scientists from various South American countries were present. Their vivacity, enthusiasm and the outstanding quality of their scientific papers were substantial contributions to the success of both the symposium and the expedition. I hope the many personal contacts forged will strengthen with time: Salt lake scientists of South America, we salute you!

The Conservation of Salt Lakes
The La Paz Manifesto

Because inland salt lakes have a wide variety of important uses and values, especially with regard to economic, cultural, aesthetic, recreational, scientific, educational and ecological values;

And because these uses and values are being seriously degraded and devalued at significant and increasing rates;

And because salt lakes are not the subject of active conservation attention to the extent that their values, uses and global extent indicate they should be;

We, participants of the Fifth International Symposium on Salt Lakes, meeting at La Paz, Bolivia, 18-22 March, 1991, under the aegis of the **Societas Interationalis Limnologiae,** urge responsible national and international agencies to take more actively and fully into account the conservation of salt lakes; and further, in order to facilitate effective conservation, we urge funding agencies to support more actively and fully scientific research on these important bodies of water.

AQUATIC ECOLOGY WORKSHOP -- POSTGRADUATES
22-24 April 1991

by Rod Connolly (Zoology Department, University of Adelaide) on behalf of 40 students.

This successful camp on Phillip Island, Victoria, centered around student research discussions -- participants were richly rewarded, maintaining a high intellectual standard in a benign atmosphere. There was an even mix of students studying marine soft benthos, reefs and freshwater streams. As well, we had talks on statistics by researchers from Melbourne and Monash universities, and evening discussions on "The Environmental Responsibilities of Scientists" and "Student/Supervisor Relations".

Thanks to VIMS (Victorian Institute for Marine Science) for student travel subsidies, and to Zoology department at University of Adelaide and University of Melbourne for administrative support.

Look out for next year's show -- by the Sydney crowd.

POSSIBLE RESEARCH ASSISTANT POSITION IF THE MONEY COMES THROUGH.

The Aquatic Resources Center (Nashville, Tennessee, USA) and the Department of Invertebrate Survey, Museum of Victoria (MOV), are hoping to hire a research assistant in early 1992 for 2-3 years to study the taxonomy and distribution of the aquatic Oligochaeta of Australia. The applicant will work in the USA for the first six months with Dr R.O.Brinkhurst in Tennessee, studying his collections of identified Australian and other species. Following this, the applicant will work at the MOV at Abbotsford, Victoria, under the supervision of Dr R. Marchant. Field work will be undertaken in streams of the south east of Australia, in the Snowy Mountain lakes and in Tasmania. Applicants are not expected to have any previous experience of worm taxonomy, but should have experience with the collection and identification of freshwater aquatic invertebrates, microscopy and histology. Word processing and illustrating skills would be an asset. Applicants should have a first degree in biology as a minimum. Salary will be determined on the basis of qualifications on a scale applicable to the Victorian public service.

Please direct all enquiries to Dr R.Marchant, MOV, 71 Victoria Crescent, Abbotsford, VIC 3067; phone (03) 4195200, fax (03) 4160475.

MINING IN KAKADU - SMALL INQUIRIES AND THE BIG INQUIRY

by Dan Faith, CSIRO Division of Wildlife and Ecology, Canberra

Having appeared in the newsletter's Vol. 28, #2 issue ("Jabiru pictorial essay") drinking beer, I'm pleased to report that a Monte Carlo study reveals this activity to be more than just a chance event - I'm now back up here in Jabiru for a few weeks again drinking beer, and pondering issues relating to biological monitoring and multivariate analysis. The main task at hand relates to our (Chris Humphrey, Peter Dostine, and myself - with lots of help from others at ARRRI) proposed experimental disturbance at Rockhole Mine Creek (briefly described in a Northern Territory report in the Vol. 28, #4 newsletter). Right now, we all wish streamflow was as predictable as beerflow; in spite of the good wet season, the flow is so rapidly diminishing that redirection of the discharge of polluted water into the creek at the pre-determined time would not allow an adequate period of post-disturbance sampling in our mini-BACI design. A proposed solution is to save this year's pre-disturbance sampling (forming the before period) and then initiate the disturbance at the beginning of next year's sampling (forming the after period) - though this introduces "nuisance variation" due to differences between years. These difficulties really raise lingering doubts in my mind...but then I think - hey, won't it be fun trying to justify this at some future ASL meeting!

Our first two years of baseline work at Rockhole Mine Creek, in documenting current impacts of the old mine on downstream macroinvertebrate communities, were useful in supporting our biological-monitoring submissions (KA 90/047 & KA 91/174) to the Resource Assessment Commission's recent Inquiry on mining in the Kakadu Conservation Zone. The following is a rough summary of the arguments we presented:

* A "conventional" view of biological monitoring policy suggests that mining activities can continue as long as impacts are not detected. This simplistic view of the role of monitoring does not guarantee adequate environmental protection. Greater protection is achieved if the monitoring program that is implemented is required to have adequate sensitivity, such that impacts that are regarded as undesirable would be detected by the program, if they occurred.

* Implementing a sensitive (or statistically powerful) monitoring program is difficult, because of problems inherent in natural systems in establishing experimental controls and independent replication of observations. Further, monitoring design may be constrained or influenced by the manner in which mining development is carried out.

* This suggests a need to reverse the "burden of proof" of monitoring in that the mining developers agree to appropriate constraints on mining development that allow

implementation of a sensitive monitoring program. In the Conservation Zone, a sensitive/powerful monitoring program may depend on adequate temporal replication over years (in a BACI design). This means that monitoring sensitivity depends, in part, on the length of the baseline period before mining development. It follows that a possible constraint on development arises from a requirement for a minimum number of baseline years before mining development commences.

* There does not seem to be any easy definition of what level of sensitivity in monitoring is "adequate". In practice, there is a need for compromise between potentially conflicting demands of development (e.g. a requirement to commence mining in the near future) and demands of monitoring (e.g. a minimum number of years of baseline data in order to detect small but "undesirable" impacts).

The final report from the Inquiry, unfortunately, side-stepped many of the difficult issues relating to monitoring standards and procedures. On the one hand, the report acknowledged the need for adequate "sensitivity" - so that mining-related impacts could be distinguished from other sources of variation, and so that no-detected-impact could be interpreted as meaning "that the ecosystem had not been 'damaged'". But then the report (Vol. 1, pp. 218,219) largely dismissed the implications of the goal of adequate sensitivity for requirements relating to monitoring design. One stated rationale for this appears to have been that collection of several years of baseline data would not be "cost-effective", and another was that the mining companies might not "have the expertise to conduct such a program". The latter reason in particular seems to be a red-herring, because the report elsewhere acknowledges that a Commonwealth agency would logically conduct the monitoring program.

I'm left asking the question -is it realistic to expect that design constraints allowing adequately "sensitive" monitoring might be achieved in practice, or will such requirements get a nod of approval, but always then lose out to other (seemingly) more pragmatic considerations?

THE FLOODPLAIN ECOLOGY GROUP IN NORTHERN VICTORIA

(A special report from Brendan Atkins, Shepparton. Held over from last issue; thank you for your forbearance, Brendan - *Eds.*)

"Water for Murray Wetlands" is what the Floodplain Ecology Group at Shepparton, Dept of Conservation and Environment wants. But when?, how much?, how long? and how do you get the water? are all important questions that Lance Lloyd, Brendan Atkins, Liz Beovich and Andy Warner are trying to answer! Lance, Brendan and Andy all moved to Shepp. from Adelaide, and Liz came from Melbourne, to begin this project last year. The project is now well underway. The group monitored last year's flood (the biggest in fifteen years), assessing the responses of aquatic plants (Lizzie's main role), macro-invertebrates (Bren's beasts) and small fish (Lance's task, of course). Andy the meter-man helps the rest of the team get on with the job and gets them out of tight spots (such as glue-pots on Murray floodplains). Each of the team has other jobs too such as developing background reports for our study sites and undertaking hydrological analyses to determine changes to flooding patterns. Future work will follow the progression of natural flooding and artificial flooding trials in order to develop water management strategies for Murray wetlands.

Keith Ward (ex La Trobe Uni) is another member the group based in Shepparton. He is undertaking a study of the so-called "Moira Grass" Plains in Barmah Forest. These swamps have declined in recent times and are subject to many impacts yet are fascinating wetland ecosystems. Keith's work, supported by Brendan and Lance, is taking an experimental approach to wetland watering. The study has examined different water regimes on Moira Grass Plains and its associated vegetation in replicate pond systems, and is supported by a transect survey of unmodified Moira Grass sites within Barmah Forest and a trial release of water along the main waterway in Barmah. Some very interesting results have emerged already, which we might tell you about sometime, if you're good.

The Floodplain Ecology Group can be contacted at the Department of Conservation & Environment, Shepparton, on (058) 311 777 for more details of these projects.

BOOK REVIEWS

Biological Information for Management of Native Freshwater Fish in Victoria
by J.D. Koehn and W.G. O'Connor
Department of Conservation and Environment April 1990

Reviewed by Andy Warner, Floodplain Ecology Group,
Department of Conservation and Environment, Shepparton.

Far from being as limited to assisting the managers and researchers of native fish as the title may imply, John Koehn and Bill O'Connor have produced an informative publication of use to all who have an interest in our freshwater fish.

In the front "glossy" sections of the book, the authors present an informative introduction to the issues surrounding the management of aquatic systems for fish and briefly introduce the reader to the forty-two fish species covered, giving their distribution and conservation status. The summary of biological information available on Victoria's freshwater species of fish is clearly presented and readily accessed with the applicable references indicated if more specific information is required.

Once past the Introduction and the Users Guide to the biological information, the first part of the book covers the concepts of stream ecology in a readable summary which outlines the requirements of fish with respect to habitat, nutrients, water quality and flow.

In discussing "Key problems and management strategies", the authors briefly suggest possible solutions to problems covered under this section which indicate what path could be followed by someone managing an aquatic system.

Each of the forty-two fish species in the book are briefly described giving common name(s), scientific name, family name, size and conservation status based on the categories adopted by the I.U.C.N. Accompanying each of these descriptions is a distribution map for Victoria showing present or presumed previous distribution of the fish.

The bulk of the publication is made up of what is essentially an 'expert system' on paper, entitled "Biological Information", which for the most part is presented in tabular form. "Feeding" and "Life cycles" is covered briefly in non-tabular form prior to the rest of the information under the following titles: "Spawning requirements and behaviour", "Fecundity and incubation", "Movement", "Behaviour and habitat preferences" and "Physico-chemical tolerances".

In referring to the sources of information from the tables for further details it should be noted that some of the publications, for example, Cadwallader and Backhouse (1983), are secondary references and sourcing the primary reference from these may provide even more information.

The tabular format of the biological information makes immediately apparent the large areas in which little is known of our fish species, particularly their larval stage. Similarly it is easy to see areas in which there is a conflict of information regarding a species, that would require clarification in future studies. A strong point in favour of this format is that is can be readily updated.

A glossary of abbreviations and terms is included following the tables and is valuable for those whose scientific terminology doesn't match the high level of enthusiasm they have for the better management of Victoria's native fish.

A ready addition to any library for those who are involved in the management of native fish and/or their environment as well as the keen naturalist or fisherman, its easy to use format and diversity of information make this a valuable publication.

Reference:

Cadwallader, P.L. and Backhouse, G.N. (1983) *A Guide to the Freshwater Fish of Victoria*. (Government Printer, Melbourne).

100 Rivers on Disk, Version 1.0: New Zealand Journal of Marine and Freshwater Research 24(3) Edited by Jas Jasperse

Reviewed by Leon Barmuta, Department of Zoology, University of Tasmania.

Late last year a special issue of the *New Zealand Journal of Marine and Freshwater Research* was devoted to the "One Hundred Rivers Project", a country-wide classification exercise involving a variety of DSIR and government researchers covering physicochemical and biological aspects of selected New Zealand rivers. Although the project is both ambitious and interesting, I won't review the science, but instead will concentrate on the concurrent experiment in electronic publishing conducted by the editor, Jas Jasperse.

I guess most of us are fearful of the information explosion which shows no sign of abating. Not only is there too much to read, but there ain't enough space to store it. As I write, a large Arcturan Megafreighter is docking just down the corridor to unload the latest edition of *Ecology* for the three subscribers in this department; apparently, the Arcturans decided that transporting scientific journals was even more profitable than delivering

Playbeing to the offices of the *Hitchhiker's Guide to the Galaxy*. And I've also heard that the Vogons are now investing in wood pulp companies as a more subtle means of destroying the planet than was described by Douglas Adams twelve years ago.

To me the advantages of electronic publishing are: less paper and hence fewer dead trees; substantial savings in storage space in both libraries and offices; use of software to search for keywords, phrases, authors and citations much more widely and quickly than is possible manually using *Biological Abstracts*, and; access to information too bulky for conventional publication (e.g. raw data). The potential disadvantages are: savings in trees being offset by massive increases in the number of floppy disks in orbit around our offices; slow, obscure software; loss of graphical information; inability to browse in a relatively unstructured way, and; difficulty or unwillingness to read an entire paper on a computer screen.

For this experiment in electronic publishing, my copy was for a monochrome IBM-compatible personal computer using an EGA video card. The entire issue of the journal, complete with graphics and specialised software was crammed onto one 5.25" high-density floppy, and came in a flashy folder with a questionnaire, and 14 pages of instructions. Two of those pages told me how to install the software and files, which was accomplished in less than half an hour - and over two megabytes of hard disk space later (nifty file compression, folks!). The next two pages were a tutorial, and within a few minutes I was happily reading an article and constructing my own searches [easily pleased, aren't you? - *Ed*]. The other ten pages of instructions were a more comprehensive guide to the searching software, of which more later.

My initial impressions were good. When you enter the software you are presented with a list of different items you can search for including abstracts alone, the full text of articles, authors' names or even citations: these are called "indexes". Once you have selected your index, you are presented with a list of goodies you can search for and the searching is as easy as simply typing in the letters of the word(s) or name(s) you want; the cursor moves down the list of words as you type, so you'll soon know if the word you want is even in the database. You can search on several words at once, and by using boolean operators (OR, AND, NOT, XOR) your searches can be as simple or complicated as you like. Pressing a few function keys takes you to the records that you have selected, be they citations, abstracts or the full text of the paper. Within two hours I was "getting by" in this software *without* having to rat through the more extensive instruction sheet; there is also extensive on-line help and a whole bunch of menus for when you forget what button to press. Once I was used to the structure of the software, dealing with indexes and finding out that it kept remembering my mistakes (easy to edit out, though), I was really quite satisfied.

Okay, so was it easy to read? Yes. The text is formatted so that there are large left margins, and paragraphs are numbered. Figures are called up simply by placing the cursor on the figure name and pressing the required keys. My first winge was that the figures were nowhere near as clear as the printed article, and maps fared particularly badly. I was glad to have a hard copy nearby. In addition, several of the figures and photos were in colour, so I can't tell you what they look like on screen (colour versions of this package were available, though). However, the rest of the presentation was excellent; large tables were easy to navigate around, and a mouse makes life even easier to highlight new words to add to searches and move around the document.

When I eventually got around to reading the other ten pages of instructions, there were even more whistles and bells, some of which are very useful. Complicated searches can be saved in a file to be run again, presumably on new databases. A hypertext feature is also included whereby new terms can be added to your search as you browse through a document. As a result you can start off with a very broad search and use this facility to narrow things down as the fancy takes you; it is also easy to remove hypersearch terms. The advanced searching facilities allow for positively Byzantine constructions to be unleashed on the unsuspecting database; however, you can get by with a couple of ANDs and ORs and the page-up and page-down keys. Finally, bits of the text can be selected and printed out either to a printer or a file for subsequent editing. Although the instructions were a bit too brief, I found them relatively easy to follow; perhaps a few more tutorial pages would help the more faint-hearted.

Now for the grizzles. The interface is a bit nerdy. Rather than be greeted with a screen advertising a long list of indexes, most novices would prefer to be offered a less daunting first choice between author, abstract, and full article on which to conduct their first searches. The other options covering citations, and other bibliographic odds and sods are all useful, but could hide out in a sub-menu somewhere else. Flipping to and from the search window also takes some getting used to, and future versions of the documentation could include some illustrated examples of several different kinds of searches. Presently I feel that only we old hacks who had to learn FORTRAN or BASIC are likely to persevere with the terse instructions which describe the really handy hypertext facilities available in this package. Some displays include a lot of gunk likely to be of interest only to bibliographers and librarians. The displays of citations could have an abbreviated option that just specifies author(s), date, title and journal or book; information on authors' and publishers' addresses, availability in on-line databases, etc. could be shuffled off elsewhere to be called up using some hypertext-like button if necessary.

These are all minor gripes, however. This package was easy to learn, and did its job quickly. By and large it was easier to run searches than most computerised library catalogues. But is this the shape of electronic publishing?

Two megabytes for a 440 page journal issue is a lot of a single-user's disk space, so I guess it will be unlikely that journals-by-floppy will be all that popular. The tenor of the questionnaire indicated that perhaps all the DSIR New Zealand journals would be put onto an optical disk (ROM disk), in which case we could just pop up to the library, search the ROM disk for the articles we wanted and print them off or dump them onto our own computers. Taken one step further, why waste resources on selling ROM disks? Turn on the modem, phone the local library's journal computer (with all the journals on some mass storage system) and get the articles that way. Saves paper, saves floppies, saves time. I daresay these issues are fuelling dozens of information science Ph.D.s, and I shudder to think of how many discussion papers and policy documents are being circulated to work out who pays and how.

The major issue, of course, is how many different sorts of software are we going to have to learn in order to use electronically published journals? If every publisher uses a different system, then this idea is dead in the water. Even packages written for "uniform" graphically oriented systems (e.g. Apple Mac, MS-Windows) are sufficiently different from each other to discourage end users from learning more than one. How this matter gets thrashed out should concern us greatly. Somehow we have to let the librarians and programmers know that we want uniform, easy, "intuitive", software that combines the power and speed of boolean computer searches with the ability to browse contents pages, abstracts and figures as we do with conventional journals. The attempt reviewed here goes a long way to achieving those goals. I look forward to seeing Version 2.

New Book Available: *Tasmanian Freshwater Fishes* by Wayne Fulton. The latest in the "Fauna of Tasmania" Series. Available from The Fauna of Tasmania Office, University of Tasmania, Box 252C, GPO Hobart, Tasmania 7001. The price is A$9.50 (A$10.50 by post). The editors have a complimentary review copy which is available to any of the literate members willing to produce an analysis of the book.

Totally Un-refereed Scientific Reports Department

WHAT INFLUENCES THE DISTRIBUTIONS OF PREDATORS AND THEIR PREY?

Peter Gehrke, Inland Fisheries Research Station, Narrandera, NSW

Simple logic determines that where both an animal and its potential prey have only limited swimming capacities, the predator must occur in close proximity to its prey in order to feed. On the other hand, it is in the best interests of prey organisms to keep a distance from their predators. How are these conflicting requirements for survival dealt with by nature?

In the mid 1980's, a series of papers indicated that the distributions of marine fish larvae off Nova Scotia were independent of the abundance and distribution of their planktonic prey (O'Boyle *et al.* 1984; Sinclair & Iles 1985; Sinclair *et al.* 1985; Anderson and Gardner 1986). The conclusion from this somewhat anomalous finding was that the larvae and their prey behaved differently in such a way that they became entrained in different water masses and as such, their distributions were determined by oceanographic processes. Ultimately, it was more a matter of chance encounters between "larval" and "prey" water masses which enabled the fish larvae to feed and survive.

Subsequently, however, Frank (1988) suggested that distributions of fish larvae are correlated with the distributions of suitable prey-sized plankton, and that the above-mentioned studies failed to sample plankton of the appropriate size. Apparently, the earlier studies use a 330 μm net to catch fish larvae, and most of the prey organisms were small enough to pass straight through this mesh size, hence the anomalous distributions. By re-establishing a close distributional relationship between predators and their prey, Frank was able to reduce the element of chance encounters which enabled the larvae to feed, and re-affirm the role of biological processes in maintaining their distribution.

In freshwater environments, it is not uncommon to find anomalous predator/prey distributions similar to those described by Sinclair and his associates. For example, Post and McQueen (1988) were unable to correlate the distributions of yellow perch larvae *Perca flavescens* to either prey or predator distributions. Similarly, in repeated experiments, I have found that golden perch larvae actively avoid habitats where the greatest prey densities occur (Gehrke 1990 and unpublished data). It is my contention that water quality in the experimental floodplain habitats was below the tolerances of the fish larvae, but the plankton were able to withstand the hypoxic conditions and polyphenol concentrations which existed on the floodplain. Thus, the different environmental

tolerances of golden perch larvae and their prey effectively provides an isolating mechanism which reduces the likelihood of predation for plankton in floodplain waters.

Spatial variation in water quality is therefore an important factor in determining the distributions of fish larvae and their prey.

References:

Anderson, J.T. and Gardner, G.A. (1986) Plankton communities and physical oceanography on the Southeast Shoal region, Grand Bank of Newfoundland. *Journal of Plankton Research* 8: 1111-1135.

Frank, K.T. (1988) Independent distributions of fish larvae and their prey: natural paradox or sampling artifact? *Canadian Journal of Fisheries and Aquatic Sciences* 45: 48-59.

Gehrke, P.C. (1990) Spatial and temporal dispersion patterns of golden perch *Macquaria ambigua* larvae in an artificial floodplain environment. *Journal of Fish Biology* 37: 225-236.

O'Boyle, R.N., Sinclair, M., Conover, R.J., Mann, K.H. and Kohler, A.C. (1984) Temporal and spatial distribution of ichthyoplankton communities of the Scotian Shelf in relation to biological, hydrological and physiographic features. *Rapports et Troces-Verbaux des Reunions. Commission Internationale pour l'Exploration Scientifique de la Mer Mediterranee* 183: 27-40.

Post, J.R. and McQueen (1988) Ontogenetic changes in the distribution of larval and juvenile yellow perch (*Perca flavescens*): a response to prey or predators? *Canadian Journal of Fisheries and Aquatic Sciences* 45: 1820-1826.

Sinclair, M. and Iles, T.D. (1985) Atlantic herring (*Clupea harengus*) distributions in the Gulf of Maine - Scotian Shelf area in relation to oceanographic features. *Canadian Journal of Fisheries and Aquatic Sciences* 42: 880-887.

Sinclair, M., Tremblay, M.J. and Bernal, P. (1985) El Nino events and variability in a Pacific mackerel (*Scomber japonicau*) survival index: support for Hjorts second hypothesis. *Canadian Journal of Fisheries and Aquatic Sciences* 42: 602-608.

ANNOUNCEMENTS

A Seminar And Workshop On Water Allocation For The Environment will be held at the University of New England on 27-29 November 1991. Australian and overseas experts will share experiences with water users, professionals, researchers, environmental interests and community groups. The theme is balancing environmental water needs with social and economic concerns. A registration pack will be mailed shortly. For further information, contact: John Pigram or Bruce Hooper, Centre for Water Policy Research, University of New England, Armidale, NSW 2351. Ph: (067) 732420; FAX: (067) 733237; E-MAIL Address: bhooper@gara.une.oz.au

International Hydrology and Water Resources Symposium 1991. This will be held in Perth, Western Australia between 2-4 October 1991, at the Hyatt Regency. The theme is "Challenges for Sustainable Development." Workshops will be conducted on 1 October. Workshops include "Public participation in decision making", "Decision support systems and expert systems", "Real world applications of optimisation techniques to water resources management", "Dryland salinisation and integrated surface and groundwater management" and "Rural water supplies in a semi-arid region". Over 200 papers on diverse themes have been accepted for the Symposium. Further information from: The Conference Manager, International Hydrology and Water Resources Symposium 1991, The Institution of Engineers, 11 National Circuit, Barton, ACT 2600.

INTECOL'S IV International Wetlands Conference will be held in Columbus, Ohio, USA between 13-17 September 1992. Being the 500th anniversary of Columbus' discovery of the New World, the theme of the meeting is "Global Wetlands - Old World and New World", attempting to unite international views and approaches to science and management of wetlands in the old and new worlds. The four main themes of the conference are: Global role and extent of wetlands; Ecological engineering and ecological monitoring of wetlands; Coupling of wetlands, floodplains and watersheds; and International approaches to management and policies for wetlands. Various excursions will be held both before and after the conference, including the non-scientific intercollegiate American Football Match between the Ohio State University "Buckeyes" and the University of Pittsburgh "Panthers". Details from Prof. A.J. McComb, Environmental Science, Murdoch University, Murdoch, WA 6150; or Prof. William T. Misch, Columbus '92 Wetlands Conference, The Ohio State University, School of Natural Resources, 2021 Coffey Rd., Columbus, Ohio 43210, USA. [Go "Buckeyes"!! - *Eds*]

The Effects of Environmental Change on Geomorphic Processes and Biota in Arid and Semi-arid Environments organised by British Geomorphological Research Group, 8-9 January, University College, Swansea, Wales. Contact Dr C. Thomas, Dept of Geography, University College, Singelton Park, Swansea, Wales, SA2 8PP.

LETTER TO THE EDITORS

IWRB
SLIMBRIDGE
GLOUCESTER
GL2 7BX
ENGLAND
Registered Charity No. 801274

TEL: 0453 890624/634
FAX: 0453 890697
TELEX: 437145 (IWRB G)

CMF/Australia

L. Barmuta
Dept. of Zoology
University of Tasmania
G.P.O. Box 252 C
Hobart, Tasmania 7001
Australia

29 April 1991

Dear Eds,

A cheerio and a pip-pip to you miserable bastards. Yes, I am prepared to use the hard words, especially when you so callously introduced mistake after mistake into my wee note about the Australian Wetland directory. Before I answer the "hard question" about the missing W in the IWRB acronym I must draw your attention to page 1 of Newsletter Volume 29 number 1. The disparaging comment about the Mac computer reveals a level of intolerance that borders on the norm for Victorians. However, the reference to washing dishes by hand reveals the gross insensitivity of the editors.

I realize that some of the ASL membership consider that the world does not extend beyond Victorian state borders, and furthermore, that being a member of ASL does not entail a prerequisite of commitment to conservation or even plain common sense. Bearing these thoughts in mind, it is time to return to the dish washing jibe. Surely, all members of the global society (for this purpose we'll even include the great state of Victoria) should applaud those who wash dishes by hand. For the edification of the eds: dishwashers waste water and energy and lead to an excessive use of detergents, some of which turn on pretty little streams and lakes into cess pools. Therefore, eds, you owe all Mac users an apology and all those who wash dishes by hand unqualified praise in your trite little Rag. See if it can be done without the usual boring little asides!

Now for IWRB. The second W has not gone missing, it was never there. In 1986 when the Ramsar Bureau was established as a separate entity to IWRB the fate of the International Waterfowl Research Bureau hung in the balance. The great minds of waterfowl conservation, including two Australian delegates, wisely decided to add Wetlands to the title to create the International Waterfowl and Wetlands Research Bureau. they also wisely decided not to add another W to the already cumbersome acronym. Wise people! There is even a suggestion that there is a hidden agenda to delete the word Waterfowl and hence, truly have an IWRB. However, there is likely to be some opposition to

INTERNATIONAL WATERFOWL AND WETLANDS RESEARCH BUREAU
BUREAU INTERNATIONAL DE RECHERCHES SUR LES OISEAUX D'EAU ET LES ZONES HUMIDES
INTERNATIONALES BÜRO FÜR WASSERVOGEL- UND FEUCHTGEBIETFORSCHUNG
МЕЖДУНАРОДНОЕ БЮРО ПО ИЗУЧЕНИЮ ВОДОПЛАВАЮЩИХ ПТИЦ И ВОДНО-БОЛОТНЫХ УГОДИЙ
BURO INTERNACIONAL PARA EL ESTUDIO DE AVES ACUATICAS Y DE HUMEDALES

Recycled Paper

IWRB

that as many birdy-folk see only the birds.... And then, they'll want to remove the word Research, and then change the traditional logo (which is not merely a swan with a broken neck, but is a Braque original). As we all know, breaking with tradition brings out both hilarious and acrimonious debate. So, all-in-all, IWRB stands as a single W acronym; and the ASL Newsletter cover needs to be re-designed, professionally and independently of the tastelessness of the editor whose name is appended to the cover of the last issue.

Yours sincerely,

H Bamhard, secretary

pp Dr. C. Max Finlayson
Assistant Director and Head of Wetlands Division

Editorial response: The editors wish to apologise unreservedly to all who wash their dishes by hand. We recognise that the sophisticated dexterity required to wash dishes in this environmentally acceptable way should in no way be equated with the rudimentary reflex arcs required to operate an Apple Macintosh. After all, *we* wash our dishes by hand. This whole unfortunate episode just goes to show that the senior editor can sometimes be asleep too. [Hey! You read it before it went to press! - *TD*] [So I did. - *LB*] [Apologise!!] [Sorry, comrade. Remember: Solidarity in the face of Adversity. More wine?] [Certainly. An excellent approach to conflict resolution. Pray continue.]

We understand that Apple Corporation will shortly be selling sinks with pull-down menus and waterproof mice for those Macintosh users whose brains have been completely integrated into System 7. Users operating under System 6.0.7 will have to continue to get their mummies and daddies to do the dishes for them.

The Editors venture no opinion on the Braque emblem. However, we draw the attention of all artistically inclined persons to the pleas from the Executive for a new A.S.L. logo and from the editors for cover artwork for this "trite little Rag". Unless artwork is forthcoming, the junior editor will be forced to continue to draw further "tasteless" cartoons.

Readers should also note that Victoria was a wholly owned subsidiary of Pyramid Building Society, which is now in receivership. Victoria is presently trading under the name "Melbourne Comedy Festival"; please be kind to it during this difficult phase.

EXECUTIVE MEMBERS

President: Dr Stuart Bunn, School of AES, Griffith University, Nathan QLD. 4111 Ph: (07) 8757407 [FAX: (07) 8757459]

Vice-President: Dr Peter Davies, Inland Fisheries Commission, 127 Davey St., Hobart TAS 7000 Ph: (002) 236622 [FAX: (002) 234372]

Immediate Past President: Dr Rod Oliver, MDFRC, PO Box 921, Albury, NSW 2640 Ph: (060) 4311002 [FAX: (060) 431626]

Secretary: Dr Richard Marchant, Museum of Victoria, 71 Victoria Crescent, Abbotsford VIC 3067 Ph: (03) 4195200 [FAX: (03) 4160475]

Treasurer/Membership Officer: Mrs Margaret Hart, 22 Netherby Avenue, Mulgrave VIC 3170 Ph: (03) 5604406 [FAX: (03) 2113646]

Regional Executive Members: 1990-91

Dr Leon Barmuta, Department of Zoology, University of Tasmania, G.P.O. Box 252C, Hobart, TAS 7001 Ph: (002) 202785; FAX: (002) 202745

Dr Richard Norris, Applied Science, University of Canberra, PO Box 1, Belconnen ACT 2616 Ph: (062) 522543; FAX: (062) 522999

Mr John Hawking, MDFRC, PO Box 921, Albury NSW 2640 Ph: (060) 431002; FAX: (060) 431626

Ms Fran Sheldon, Dept. Zoology, University of Adelaide, Box 498 GPO, Adelaide SA 5001 Ph: (08) 2285333; FAX: (08) 2235817

Dr Stuart Halse, CALM, PO Box 51, Wanneroo WA 6065 Ph: (09) 4055100; FAX: (09) 3061649

Dr Pierre Horwitz, Dept. Geography & Environmental Studies, University of Tasmania, GPO Box 252C, Hobart TAS 7001 Ph: (002) 202840; FAX: (002) 202186

Dr Rob Congdon, Botany Dept., James Cook University, Townsville QLD 4811 Ph: (077) 814731; FAX: (077) 251570

Dr Bob Pidgeon, Office of the Supervising Scientist, PMB Jabiru NT 0886 Ph: (089) 799711; FAX: (089) 792076

Newsletter Editors: Dr Leon Barmuta (address above); Mr Tim Doeg, Arthur Rylah Institute, Conservation and Environment, 123 Brown Street, Heidelberg Vic 3084 Ph: (03) 4508622; FAX (03) 4508799